

## Exploration on Teaching Reform of Industrial Robot Specialty in Vocational Education under the new situation

Li Zhili

Hubei Three Gorges Polytechnic, Yichang City 443000, China

lizhilix@126.com

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**Abstract:** With the introduction of the concept of Industrial 2025 and the implementation of the “Made in China 2025” strategy, the application of industrial robots has set off a wave in various industries, and more vocational colleges have offered courses related to industrial robots. As an important base for the cultivation of applied skills, vocational education plays a more and more important role. According to the course characteristics of robot technology application, this paper expounds the application of vocational education method of integration of production and education, and explores the teaching reform of industrial robot specialty in vocational education under the new situation.

### 1. Introduction

With the progress of society and the development of science and technology, the cost of social work force is increasing, and the lack of workers' skills leads to the bottleneck of the application of advanced technology. After entering the 21-st century, intelligent robot will used in production in an all-round way. It is a challenge for technical colleges and universities to do a good job in robot technology education and train a large number of excellent high-skilled robot applied talents. The course related to industrial robot is a course that combines theory with practice. The training goal of vocational colleges is mainly to cultivate students' practical ability, but the actual situation is that, on the one hand, the teaching of robot theory is relatively boring. On the other hand, students' basic knowledge is better than that of students' basic knowledge. In order to be weak, either the existing teaching materials biased towards theory or systematically, which makes it difficult to inspire students' interest in industrial robot learning, does it conform to the learning laws of vocational college students. There is a lack of systematic and realistic requirements in teaching. In order to solve the problems existing in practical teaching, through the creation of teaching situation, game interactive teaching method, with the help of project-led, task-driven teaching mode, make full use of simulation software and practical equipment. In order to stimulate students' enthusiasm and initiative in learning, we should combine theoretical knowledge with practical practice systematically. Through this teaching mode, it is boring and difficult to understand. Students can digest theoretical knowledge and complex hands-on operation organically in order to achieve the expected teaching objectives and effects.

### 2. The characteristics of the course of Industrial Robot Specialty

The course of industrial robot is a special skill-training course of macaronis technology, and industrial robot is a complex macaronis system. Its learning process integrates mechanical engineering, computer science, control engineering and electronic technology. The comprehensive technology of sensing technology, artificial intelligence and other multi-disciplinary fields is the ineviTable result of the development of multi-disciplinary science and technology, and it is also a macaronis product with complete technology and highly dense science and technology. Therefore, robot education is different from traditional subject education. Simple professional courses such as mechanical drawing, electrical control, sensing technology and so on are only the basis of robot

learning, the study of this course should be a The establishment of architectural system and the full mining of modularity. Facing the market under the whole machine system, we should deeply understand a certain field, think actively in the in-depth study, and connect the technology of various disciplines organically to form a unique knowledge network system.

### **3. Application of Industrial Robot Specialty course in Vocational Education**

Vocational education covers many aspects, such as “teaching”, “specialty”, “technology” and so on. The study of vocational education can guide the direction of vocational education, improve the quality of vocational education, and train more artisans and skilled artisans in more large countries in our country. In addition, for the modern manufacturing industry, service industry, agriculture and other modern development to provide an important guarantee and support. Nowadays, as an important part of vocational education, the application of industrial robot technology is not only facing the new challenges of vocational education brought by the era of robotics, but also accepting the new test of the job market. Robot technology is also becoming more and more popular in vocational education. The traditional teaching form is single, mostly in a systematic way. Theoretical learning is the main, weakening the practical operation, the students' practical ability is obviously insufficient, some theoretical knowledge is more difficult to master, there are no excellent operational skills, after entering the enterprise, and the enterprise lacks systematic theoretical guidance for the training of employees. The long training cycle and the large investment of resources greatly restrict the improvement of students, affect the development of enterprises, and deviate from the goal of cultivating talents in vocational education. According to the characteristics of the course of industrial robot specialty, the theoretical study and practical operation combined organically to form the integrated teaching mode of theory and reality. The teaching mode not only systematically teaches the course specialty, but also aims at the organic one. The related study of the instrument human product manual has greatly cultivated the students' initiative and enthusiasm in learning tamped the theoretical foundation with the practical operation has a certain foundation for the docking of the post demand of the enterprise, and has trained the new technology. The ability of accepting and understanding new things, the ability of group cooperation, the ability of active learning and so on, but also promote the scientific research ability of teachers. In the theoretical teaching class, teachers teach the theory of project tasks by using modern teaching methods, and collate and guide the basic knowledge of some disciplines involved, such as some difficult knowledge of Abstract understanding of concepts. Go to the teaching site and compare it with the object. At the same time, teachers carry out practical training through demonstration operation, and flexibly master the methods of discussion, group communication, teacher-student interaction and so on. After the completion of each project task, the teacher carries on the comment summary, guides the practice through the theory, exercises the specialized technology, the practice strengthens the theory, enhances the professional understanding. Ask students to review the shortcomings of their own learning process and improve them. In the choice of teaching items, closely around the current domestic robot application market, meet the needs of education and teaching, take into account industrial applications, and create a factory professional environment, flexible application of project teaching, processing simulation teaching. with Sports case teaching and other teaching methods integrate industry and education, improve students' comprehensive professional ability and enhance the competitiveness of employment. The popularity of industrial robots not only affects the employment of vocational education, but also gives too many new industries, which create new jobs, including robot assembly, sales, after-sale support technology and marketing in robot manufacturers. Engaged in robot workstation development, installation and debugging, technical support, etc.; in robot application enterprises engaged in robot workstation operation, programming debugging, maintenance and so on engaged in industrial robot professional work. Therefore, robot technology should We should meet the market demand of the development of the times, seize the opportunity of the development of vocational education, carry out it in a planned way, and actively promote the function of vocational education [4].

## **4. Teaching Reform of Industrial Robot Specialty guided by practice under the New situation**

### **4.1 Strengthening the construction of the training base in the school.**

The major of industrial robot belongs to the specialty with strong operation and technology. Therefore, in order to realize the teaching reform of industrial robot specialty guided by practice, it is necessary for colleges and universities to be able to build relevant in-school training bases. Create good training conditions for our students and improve their practical operation ability. Industrial robot is a new type of machine project, which is mainly faced with multi-joint manipulator and other related mechanical devices in the industrial field. Industrial robots can automatically realize various functions by relying on their own control ability and power. In addition, it can also be under the command of human beings, in accordance with the pre-set procedures to operate. At work In the teaching reform of industrial robot specialty, the construction of training base in school can also appropriately increase the project of industrial robot and provide more practical opportunities for students. Therefore, colleges and universities should set up teaching workshops and related training classrooms, which should used for students to carry out hands-on operations. The construction of training base can provide important learning situation for the construction of curriculum system and curriculum development, as well as important practical conditions for students. Students can really contact the production environment in the training base, and experience the real feeling of the actual work in the process of learning. In addition, in the course of operating in the training base, the students do In order to reflect the subject position of learning, many creative thinking appears in the process of operation, and the comprehensive quality of students is obviously improved.

### **4.2 Innovating teaching mode.**

Teachers are in a guiding position in the completely teaching process, and the learning process of students influenced by teachers' teaching methods largely. Therefore, in the process of innovation and reform of industrial robot specialty, it is an important measure to change the teaching mode. Hierarchical systematic teaching method is an important innovative teaching mode. The teaching method is mainly that teachers configure the corresponding teaching contents and assessment standards after realizing the classification of different stages, which requires students to complete the tasks of each stage in turn. Finally, the evaluation carried out. This innovative teaching model can adopt targeted teaching schemes for students at different learning stages and obtain positive teaching. Learn the effect. Therefore, in the teaching of industrial robot specialty, teachers can carry out systematic teaching method. First, teachers divide practical teaching into four different stages, and set the corresponding teaching objectives and assessment indicators for the content of each stage. Students must complete the first stage of learning and meet the requirements before they can successfully enter the next stage of learning. In this hierarchical teaching mode, the learning content set by teachers should connect with the actual production process, and the emphasis of practical teaching should embodied in practice. In the completely teaching activity, it should carry out in a project-style and task-driven way, and the theoretical explanation and imitation should carry out in the course of teaching. True practice and practical training are interspersed. At the same time, task-driven competition around teaching games and competitions can fully enhance students' initiative and enthusiasm. Teaching design always revolves around two important factors: teaching content and students' learning law. The motion instructions of industrial robots to learn dispersed into each task according to different requirements, and each task related to each other. The difficulty of the task and the knowledge and skills it contains are gradual and orderly. Based on mastering the basic instructions and through a task close to reality, students can deeply understand how to apply the knowledge they have learned and cultivate their ability to solve problems. After design, the characteristics of the teaching process are as follows.

- (1) in theoretical teaching, create situations and make full use of multimedia teaching resources.
- (2) in the practical training teaching, the task-driven teaching method is adopted, and the game, competition and other organizational forms are added to the teaching design.
- (3) To guide students to learn and innovate systematically.

In view of the lack of systematic and realistic teaching in the course of industrial robot,

combined with the actual situation of robot teaching, this paper probes into and innovates the course of industrial robot. Through the classroom teaching reform, the students' interest in industrial robot learning has been stimulated, and good teaching results have obtained. This also motivates me to accumulate material, integrate innovation and teaching reform in my usual work. In the continuous practice, I believe these measures will be constantly improved and improved.

#### **4.3 Cooperation between school and enterprise to provide practical base.**

In order to solve the problem of human resources more quickly, many enterprises have long-term cooperation with colleges and universities, and the schools have targeted delivery of talents for enterprises. Therefore, in the course of carrying out the practice teaching reform of the industrial robot, in order to provide the students with the practical training opportunity as much as possible, the school and the enterprise can cooperate in a long-term to provide the students with the practice base. Some industry-based enterprises have their own professional operation site. If the students can enter the enterprise operation base before graduation, they will be even more profound to the professional knowledge of the industrial robot, which is not only beneficial to the training and development of the students' self-operation skills, but also Recruit professional talents in enterprises.

#### **5. The goal of Teaching Reform of Industrial Robot Specialty under the new situation**

It takes two years to make the industrial robot specialty into a national higher vocational demonstration major, which has distinct characteristics, meets the requirements of local economic and social development, and plays a leading role in the same kind of education. According to the requirements of each post (group) of industrial robot major, the training objectives and curriculum are determined. According to the principle of careful design and overall optimization, we should do a good job in the construction of teaching documents, teaching materials, teaching staff and experimental practice facilities and bases. Actively explore the effective school-running system of two-year higher vocational education, add strengthen the cooperative relationship between schools and enterprises or promote the modernization of vocational education through the establishment of industrial robot professional vocational education groups and so on.

#### **6. Summary**

Through the teaching reform of industrial robot specialty, this paper analyzes the teaching reform of industrial robot specialty guided by practice, hoping to provide help for the cultivation of more talents of industrial robot specialty. Starting from vocational education, we should strengthen the deep cooperation between enterprises and higher vocational colleges, vigorously develop the major of industrial robot technology in domestic higher vocational colleges, and let enterprises provide more typical application schemes of robots for vocational education. To train more common robot integrated talents, shorten the adaptation time of students' robot technology posts, reduce the cost of enterprise talent training, and provide help for “made in China 2025”.

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